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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/673,914
Filing Date: September 29, 2003
Appellant(s): LEIPOLD, KURT

O' Shea Getz P.C.
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10-20-2009 appealing from the Office action mailed 05-29-2008.

The appeal brief is filed in the new format under the revised BPAI final rule before the effective date of the BPAI final rule. The Office published the BPAI final rule to amend the rules governing practice before the BPAI in ex parte patent appeals. See Rules of Practice Before the Board of Patent Appeals and Interferences in Ex Parte Appeals; Final Rule, 73 FR 32938 (June 10, 2008), 1332 Off. Gaz. Pat. Office 47 (July 1, 2008). However, the effective date for the BPAI final rule has been delayed. See Rules of Practice Before the Board of Patent Appeals and Interferences in Ex Parte Appeals; Delay of Effective and Applicability Dates, 73 FR 74972 (December 10, 2008). In the notice published on November 20, 2008, the Office indicated that the Office will not hold an appeal brief as non-compliant solely for following the new format even though it is filed before the effective date. See Clarification of the Effective Date Provision in the Final Rule for Ex Parte Appeals, 73 FR 70282 (November 20, 2008). Since the appeal brief is otherwise acceptable, the Office has accepted the appeal brief filed by appellant.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Otani	(JP 07-267003)	10-17-1995

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 1-4, 12-19, 21 and 24-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Otani (JP 07-267003).

Consider claim 1, Otani teaches a sound system for a vehicle having at least one door (see figs.1, 4, (1 in fig. 1 or 20 or 30 in fig. 4)), said sound system comprising:

a loudspeaker (2 in fig. 1 or 21 or 31 in fig. 4) having a resonant volume formed by a first cavity (in the door 1 or 30 and the inner space of a door as a cabinet) situated inside of the at least one door (1 or 30) and a second cavity (the space of the pipe 6 in fig.1 or pipe 40 in fig.4) situated inside a structural component of a frame (the whole fame of the vehicle) of the at least one door and outside of any other door within the vehicle (figs. 1, 4); and

means for pneumatically coupling said first and second cavities (5a, 5a' in fig. 1 or 50a, 50a' in fig. 4, (in the door 1 in fig.1 or 30 in fig.4 and the inner space of a door as a cabinet) and 6 in fig.1 or 40 in fig.4 (the space of the pipe 6 in fig. 1 or pipe 40 in fig.4) to form said resonant volume (inner space of the door (1 in fig. 1 or 30 in fig. 4) and inner space of the pipe (6in fig.1 or 40 in fig.4) (see detailed description page 3 [0024]-[0026], page 4 [0034]-[0037]).

Consider claims 2-3, Otani teaches the means (see figs.1, 4 (2, 21)) for coupling comprises a first opening (5a) in the first cavity (5a in fig.1 or 50a in fig. 4, in the door 1) and a second opening (5a'in fig.1 or 50a' in fig.4) in the second cavity (6 in fig.1 or 40 in fig. 4), the first and second openings (50a, 50a'in fig.4 or 5a,5a' in fig.1) being arranged in close proximity to each other when the door (1in fig. 1 or 20 in fig.4) is closed; and at least one of the two openings is provided with a sealing lip, which is compressed when the door is closed and seals off the coupling of the two cavities from the outside (see figs.1, 4 (5a, 50a and 6, 40) and detailed description page 4[0034]-[0037]).

Consider claim 4, Otani teaches that at least one of the two openings (see fig. 4 (50a, 50a')) is provided over the cross-sectional area with an acoustically neutral cover that is permeable to air (see fig.4 (20 and 40) and detailed description page 4[0034]-[0037]).

Consider claim 12, Otani teaches at least one of the cavities (see fig. 4 (20, 30, 40)) is open to the outside of the resonant volume via diffusion openings (see fig.4 (20, 30 and 50) and detailed description page 4[0034]-[0037]).

Consider claims 13-15, Otani teaches the second cavity (see fig.4 (40) includes a volume defined at least by hollow parts (50a,50a') of the support frame of the vehicle (see detailed description page 4[0034]-[0037]); and the support frame includes an A-pillar of the vehicle (see fig.1, (4)) and the support frame includes a B-pillar of the vehicle (the space under said in fig.1, (6)).

Consider claims 16-19, Otani teaches that the support frame includes inherently a sill of the vehicle (see fig.1); and the second cavity (40 in fig.4) includes a volume

surrounded by bodywork parts of the vehicle (see fig.3); and the loudspeaker (see fig.4 (21)) is installed in the bodywork parts (see detailed description page 4[0034]-[0037]); and the loudspeaker (see fig.4 (21)) is arranged in the door (see detailed description page 4[0034]-[0037]).

Consider claim 21, Otani teaches a sound system for a vehicle having at least one door (see figs.1, 4, (1 in fig. 1 or 20 or 30 in fig. 4)), the sound system comprising:

a loudspeaker (2 in fig. 1 or 21 or 31 in fig. 4) having a resonant volume formed by a first cavity (1 in fig.1 or 20 in fig. 4, in door 1, the inner space of a door as a cabinet) situated inside of the at least one door (1 in fig.1 or 20 in fig.4) and by a second cavity (the space of the pipe 6 in fig.1 or pipe 40 in fig.4) situated outside of the at least one door, where the second cavity comprises a volume defined within hollow parts (50a in fig.4 or 5a in fig.1) of a support frame of the vehicle; and means for pneumatically coupling the first and second cavities(5a, 5a' in fig. 1 or 50a, 50a' in fig. 4, in the door 1 in fig.1 or 20 in fig.4 (the inner space of a door as a cabinet) and 6 in fig.1 or 40 in fig.4 (the space of the pipe 6 in fig.1 or pipe 40 in fig.4) to form the resonant volume (inner space of the door (1in fig.1 or 20 in fig.4) and inner space of the pipe (6 in fig.1 or 40 in fig.4) (see detailed description page 3 [0024]-[0026], page 4 [0034]-[0037]).

Consider claims 24-25, Otani teaches that the means (see fig.5 (40)) for pneumatically coupling comprises tubing; and the second volume is located within an A-pillar of the vehicle (see fig.1 (4) and detailed description page 3[0024]-[0026]).

Consider claims 26-27, Otani teaches that the second volume (see fig.1 (5b')) is located within an A- pillar (4) and a door sill of the vehicle (see detailed description page

3 [0024]-[0026]); and the second volume is located within an A- pillar, a door sill and a roof support of the vehicle (see figs 1-4 and see detailed description page 3 [0024]-[0026]).

Consider claim 28, Otani teaches a sound system for a vehicle having at least one door (see figs.1, 4, (1 in fig. 1 or 20 or 30 in fig. 4)), the sound system comprising:

a loudspeaker (2 in fig. 1 or 21 or 31 in fig. 4) having a resonant volume formed by a first cavity (1 in fig. 1 or 20 in fig. 4, in door 1, the inner space of a door as a cabinet) situated inside of the at least one door and by a second cavity (the space of the pipe 6 in fig.1 or pipe 40 in fig.4) situated outside of the at least one door, wherein the second cavity (the space of the pipe 6 in fig. 1 or pipe 40 in fig. 4) comprises a volume inside a structural component of the frame of the at least one door (see figs. 1, 4); and

means for pneumatically coupling the first and second cavities (5a, 5a' in fig. 1 or 50a, 50a' in fig. 4, in the door 1 in fig.1 or 20 in fig. 4 (the inner space of a door as a cabinet(first cavity)) and 6 in fig.1 or 40 in fig.4 (the space of the pipe 6 in fig.1 or pipe 40 in fig.4 (second cavity)) to form the resonant volume (1, 6 in fig.1 or 20, 40 in fig.4 (inner space of the door(1, in fig.1 or 20 in fig.4) and inner space of the pipe (6 in fig.1 or 40 in fig.4) (see detailed description page 3 [0024]-[0026], page 4 [0034]-[0037]).

2. Claims 5-11, 20, 22-23 and 29-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otani (JP 07-267003).

Consider claim 5, Otani teaches that the two cavities (see fig.1 (5a and 5b')) are coupled to one another by a tube connection ((6) and passenger compartment) and

abstract); but Otain does not explicitly teach that a telescopic tube is used to connect two openings in the cavities.

However, a telescopic tube connection is just one of the typical well known tube connections (official notice is taken).

Therefore, it would have been obvious that the cavities connection device as taught by Otani could have used a telescopic tube for flexibly connecting the two opening cavities.

Consider claims 6-7, Otani teaches the tube connection has two tubes (see fig.1 that can be displaced one inside the other and engage in openings of the cavities and at least one of the tubes (6) is connected in an articulated manner to one of the two cavities (5a,5b').

Consider claims 8 and 10, Otani teaches that a partially tube (see fig.1, (6)) is provided for the articulated connection; and the two cavities (see fig. 1 (5a,5b')) are coupled to one another by a hose (6) that connects two openings in the cavities (see fig. 1 (5a,5b') and abstract); but Otani does not explicitly that a flexible tube or a flexible hose to connect two openings in the cavities.

However, a flexible tube or a flexible hose connection is one type of well known tube connection (official notice is taken).

Therefore, it would have been obvious that the cavities connection device as taught by Otain could have used a flexible tube or a flexible hose as claimed for easily connecting the two opening cavities.

Consider claim 11, Otani teaches the low-frequency loudspeaker (see fig.1 (2)) is surrounded by a box defining the first or second cavity (see fig.1 (5a,5b') and see dialed description page 3[0024]-[0026]).

Consider claim 20, Otani teaches that the first cavity (see fig 1, (1)) is pneumatically coupled to a cavity situated outside the door by further coupling devices (see abstract); but Otain does not explicitly teach a third cavity situated outside the door.

However Otani does not limit the number of cavities that the passenger compartment to be divided into.

Therefore, it would have been obvious that the passenger compartment as taught by Otani could have been divided in two cavities to enhance the low frequency output signals.

Consider claims 22-23, Otani dose not explicitly teach the means for pneumatically coupling comprises a bellows or a telescoping tube connection.

However, a bellows or a telescoping tube connection is one type of well known tube connection (official notice is taken).

Therefore, it would have been obvious that the cavities connection device as taught by Otani could have used a bellows or a telescoping tube connection as claimed for easily connecting the two opening cavities.

Consider claims 9, 29 and 30, they are essentially similar to claims 22-23 and are rejected for the reason stated above apropos to claims 22-23.

Consider claim 31, Otani teaches that the means (see fig.5 (40)) for pneumatically coupling comprises tubing.

Consider claims 32-34, Otani teaches that the second volume is located within an A-pillar of the vehicle (see fig.1 (4) and see detailed description page 3 [0024]-[0026]); and the second volume (see fig.1 (6)) is located within an A- pillar (4) and a door sill of the vehicle (see detailed description page 3 [0024]-[0026]); and the second volume is located within an A- pillar, a door sill and a roof support of the vehicle (see figs 1-4 and detailed description page 3 [0024]-[0026]).

(10) Response to Argument

It is noted that independent claims 1, 21 and 28 requires a resonant volume formed by a first cavity and a second cavity. In other words, it is the combination of the two cavities, instead of the first cavity or the second cavity alone, that provides the resonant effect. In Otani, the hollow/inner space of the front door 1 which contains speaker 2 vibrates and generates resonance. The hollow space of the tube 6 or pipe 40 serves as the second cavity. The combination of the two cavities clearly provides the resonant effect.

Appellant alleged that Otani does not teach "a loudspeaker having a resonant volume formed by a first cavity situated inside of the at least one door and a second cavity situated inside a structural component of a frame of the at least one door and outside of any other door within the vehicle; and means for pneumatically coupling the first and second cavities to form the resonant volume" (page 7, first paragraph).

The examiner disagrees. Otani discloses a loudspeaker (2 in fig. 1 or 21 or 31 in fig. 4) having a resonant volume formed by a first cavity (in the door 1 or 30 and the inner space of a door as a cabinet) situated inside of the at least one door (1 or 30) and a

second cavity (the space of the pipe 6 in fig.1 or pipe 40 in fig.4) situated inside a structural component of a frame (the whole fame of the vehicle) of the at least one door and outside of any other door within the vehicle (figs. 1, 4); and means for pneumatically coupling said first and second cavities (5a, 5a' in fig. 1 or 50a, 50a' in fig. 4, (in the door 1 in fig.1 or 30 in fig.4 and the inner space of a door as a cabinet) and 6 in fig.1 or 40 in fig.4 (the space of the pipe 6 in fig. 1 or pipe 40 in fig.4) to form said resonant volume (inner space of the door (1 in fig. 1 or 30 in fig. 4) and inner space of the pipe (6in fig.1 or 40 in fig.4) (see detailed description page 3 [0024]-[0026], page 4 [0034]-[0037]). It meets the limitation as recited in claim 1.

Appellant further alleged that Otani does not teach "a loudspeaker having a resonant volume formed by a first cavity situated inside of the at least one door and by a second cavity situated outside of the at least one door, where the second cavity comprises a volume defined within hollow parts of a support frame of the vehicle; and means for pneumatically coupling the first and second cavities to form the resonant volume" (remarks, page 9, first paragraph).

The examiner disagrees. Otani discloses a loudspeaker (2 in fig. 1 or 21 or 31 in fig. 4) having a resonant volume formed by a first cavity (1 in fig.1 or 20 in fig. 4, in door 1, the inner space of a door as a cabinet) situated inside of the at least one door (1 in fig.1 or 20 in fig.4) and by a second cavity (the space of the pipe 6 in fig.1 or pipe 40 in fig.4) situated outside of the at least one door, where the second cavity comprises a volume defined within hollow parts (50a in fig.4 or 5a' in fig.1) of a support frame of the vehicle; and means for pneumatically coupling the first and second cavities (5a, 5a' in fig. 1 or

50a, 50a' in fig. 4, in the door 1 in fig.1 or 20 in fig.4 (the inner space of a door as a cabinet) and 6 in fig.1 or 40 in fig.4 (the space of the pipe 6 in fig.1 or pipe 40 in fig.4) to form the resonant volume (inner space of the door (1in fig.1 or 20 in fig.4) and inner space of the pipe (6 in fig.1 or 40 in fig.4) (see detailed description page 3 [0024]-[0026], page 4 [0034]-[0037]). Since the claimed lauguage does not define where the cavity begins and where the cavity ends, the first cavity is met by 20 in fig. 4 (front door inner space), the second cavity is met by the inner space of the pipe 40 in fig.4. Otani meets the limitation as recited in claim 21.

Appellant further alleged that Otani does not teach "a loudspeaker having a resonant volume formed by a first cavity situated inside of the at least one door and by a second cavity situated outside of the at least one door, where the second cavity comprises a volume inside a structural component of the frame of the at least one door; and means for pneumatically coupling the first and second cavities to form the resonant volume" (page 9, third paragraph).

The examiner disagrees. Otani discloses a loudspeaker (2 in fig. 1 or 21 or 31 in fig. 4) having a resonant volume formed by a first cavity (1 in fig. 1 or 20 in fig. 4, in door 1, the inner space of a door as a cabinet) situated inside of the at least one door and by a second cavity (the space of the pipe 6 in fig.1 or pipe 40 in fig.4) situated outside of the at least one door, wherein the second cavity (the space of the pipe 6 in fig. 1 or pipe 40 in fig. 4) comprises a volume inside a structural component of the frame of the at least one door (see figs. 1, 4); and means for pneumatically coupling the first and second cavities (5a, 5a' in fig. 1 or 50a, 50a' in fig. 4, in the door 1 in fig.1 or 20 in fig. 4 (the

inner space of a door as a cabinet(first cavity)) and 6 in fig.1 or 40 in fig.4 (the space of the pipe 6 in fig.1 or pipe 40 in fig.4 (second cavity)) to form the resonant volume (5a, 5a',6 in fig.1 or 50a, 50b, 40 in fig.4 (inner space of the door(1, in fig.1 or 20 in fig.4) and inner space of the pipe (6 in fig.1 or 40 in fig.4) (see detailed description page 3 [0024]-[0026], page 4 [0034]-[0037]).

As set forth above with respect to claims 1 and 21, it is respectfully submitted that reading the claimed second cavity onto elements 6, 40 in figs. 1, 4 of Otani is proper, since the resultant system would operate as a resonant volume. Audio waves are allowed to pass through opening 5a or 50'a of Otani, and into elements 6 or 40 as the second cavity for working as a resonant volume. Accordingly, it meets the claimed limitations as recited in claim 28.

Appellant further alleged that in Otani the open end 5b of second cavity (pipe 6) prevents the system from operating as a resonant volume (page 9, last paragraph).

The examiner's response follows. Claim 1 requires a resonant volume formed by a first cavity and a second cavity. In other words, it is the combination of the two cavities that provides the resonant effect. In Otani, the hollow inner space of the front door 1 serves as the first cavity and the space of the tube 6 acts as the second cavity. The loudspeaker is mounted in the door. One of ordinary skill in the art would recognize that the speaker's diaphragm vibrates and generates backwave / resonance. One of ordinary skill in the art would also recognize that both a closed-ended tube and an open-ended tube can generate resonance. Therefore, the combination of the two cavities forms the resonance volume and meets the limitations as recited.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/LUN-SEE, LAO/

Examiner, Art Unit 2614

December 22, 2009

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